

The zombie theory of innate IQ

Attempts are being made to resuscitate the idea that ability is predetermined by our genes – doubtless linked to moves within the Conservative Party to reintroduce grammar schools and selection at 11. Recent research by Robert Plomin claims that 60 percent of achievement in GCSE Maths or Science is genetic. His work is acclaimed by Michael Gove's senior adviser Dominic Cummings. (See the linked article earlier in this issue *Bad science, worse politics.*)

The belief that academic ability is genetically inherited has long served to justify inequality. The tendency for children from prosperous families to score higher on IQ tests was used to justify these families' wealth.

As Henry Goddard, a founding father of IQ theory in the USA, put it: "The people who are doing the drudgery are, as a rule, in their proper places." He explained to students at Princeton in 1919: "Now the fact is, that workmen may have a ten year intelligence while you have a twenty. How can there be such a thing as a social equality with this wide range of mental capacity?"

Critics have pointed out that the rich don't inherit wealth and success through superior IQ. Bowles and Nelson (1974) showed that a child whose family is in the top 10 percent economically had 25 times more chance of joining the top 10 percent as an adult, compared with a child with equal IQ from the poorest 10 percent.

In Britain, before comprehensive schools, IQ tests were used to restrict the education of most manual workers' children. It was assumed that a few children from manual-worker families had accidentally acquired an unexpectedly good set of genes and should be educated in grammar schools, but the vast majority should receive a short, cheap and low-quality education in secondary modern schools.

All of this is based on the scientific myth of inherited IQ. Intellectual development, like most biological processes, depends upon complex interactions between an organism and its environment. It is impossible to know how much potential anyone is born with, nor can we separate this from experience and upbringing. Consequently, psychologists who wished to avoid thinking about class and poverty devised statistical methods to try to isolate an elusive core of innate 'intelligence'. The classic studies are based on identical twins separated by adoption who, in theory, have the same genes but diverse environments.

Twins

The most influential twins studies in England, by educational psychologist Cyril Burt, were exposed after his death as fictitious. The notion of innate fixed intelligence was discredited, though Herrnstein and Murray in *The Bell Curve* (1994) scandalously resurrected the old myth that Black Americans' lower scores on IQ tests signified genetic inferiority, rather than the accumulated effects of poverty, segregation and oppression.

The attempt to find genetic causes for psychological characteristics such as intelligence, aggression, dyslexia and homosexuality is now known as Behavioural Genetics. Its researchers may be predisposed to believe that ability is mainly genetic. Non-believers rarely devote themselves to the specialism, just as you rarely find a poltergeist investigator who doesn't believe in poltergeists.

Perhaps some of its advocates have inherited a gullibility gene? The best known modern series of studies, associated with Bouchard - repeatedly cited by Plomin - began, to a blaze of publicity, with two twins named Jim by their adoptive parents. Both had married and divorced a woman called Linda, remarried a Betty, and had a dog called Toy. They had both been firemen, and went for holidays to the same beach, but claimed never to have met till age 39. Are we supposed to believe in a gene for marrying women called Linda and Betty, or is somebody having a laugh? (Critics complain about Bouchard's refusal to allow non-believers access to his case study records.)

False premises

The studies rely on several shaky premises. Fundamentally the hypothesis is that intelligent thinking in different fields is underpinned by an innate generic intelligence (known as 'g'). Since researchers within this paradigm restrict 'intelligence' to *abstract* forms of problem-solving, whether verbal or mathematical, it is not surprising that these skills correlate with one another; even so, the various sub-tests in use only correlate around 40%. This overlap is assumed to be the generic *innate* core; an easier explanation is that the tasks involve some similar skills.

There is a deep flaw in the claim that the abstract questions found in IQ tests identify 'innate intelligence' independent of school-based learning. Solving hypothetical problems depends on certain ways of life and types of education. When Vygotsky and Luria presented syllogisms about hypothetical polar bears to Uzbek nomads, their respondents would only answer "You only find black bears living here". It seems that dealing with purely hypothetical problems is something we acquire at school.

There is also the false assumptions that adopted twins grow up separately from one another and from their natural parents. In one of the largest modern studies, based in Sweden, nearly half the pairs of twins grew up in close proximity: typically one stayed with its mother, while the other lived with a grandparent or aunt.

The best known American research series, coordinated by Bouchard, uses a biased sample, since it is based on twins who volunteered themselves, or were identified, precisely because they seemed so alike. Some even admitted faking similarities.

Even when two identical twins are genuinely separated, they do not have randomly different environments. They are the same sex, born on the same day, attend schools run along similar lines. They grow up in the same culture, including current fashions and trends in music. Vetting procedures for adoption ensure that prospective parents are reasonably well off, quite well educated, and are likely to be very caring parents. All of this weights the statistics by reducing environmental variability, thus making heritability appear larger.

Misleading mathematics, shifting definitions

The problem with the mathematical method can best be understood by analogy. If a sample all enjoy a uniformly wonderful environment, the variability is largely the result of genetic difference. This edges the score for 'heritability' towards 100% as if the environment has contributed nothing. Imagine a country where every child enjoys perfect nutrition and exercise and grows to a height of between 6 and 7 feet. Because nobody's growth is restricted by upbringing, the *differences* in their heights will be entirely genetic.

Heritability will calculate as 100% and, in this perfect environment, environmental effects will count as zero! In reality of course, environment will have made a major contribution to their growth. This explains why heritability appears higher in richer families. Gove's adviser Cummings appears not to understand this; he seems to believe that the (false) claim that success in the new phonics test is 70% 'heritable' makes nursery education a waste of money.

Behavioural Genetics experts are constantly having to shift their ground because the data doesn't fit. Plomin found that twins appeared to become increasingly similar as they grew older. This would suggest the power of environment over genetics. However Plomin reaches the opposite conclusion, arguing that people who are genetically clever gravitate towards clever things. He is forced to redefine IQ as an 'appetite', not an 'aptitude'. We are expected to believe that some people are more likely to read and go to libraries than others because of a genetic predisposition.

IQ scores were meant to be fixed, reflecting inherited intelligence, but are in fact rising relentlessly in entire populations – known as the Flynn Effect. James Flynn has assembled data from many different countries to show an IQ gain of around 15 points each generation (one Standard Deviation), as society changes and education improves. In other words, someone who now scores as average would have appeared extremely bright if tested 30 years earlier. Consequently, test designers periodically recalibrate test scores. Gove's adviser seems ignorant of this, and Flynn's name is also significantly absent from the index of Plomin's books.

The notion that genes can tightly determine behaviour is also undermined by recent scientific understanding known as epigenetics. Genes interact in complex ways, they are switched on and off, their impact is modified by a kind of dimmer switch, and environmental issues such as stress or poor nutrition can have a long-term impact on how genes have an effect.

For over 20 years, Plomin has been predicting that we are on the edge of a major breakthrough, and about to find the genes responsible for intelligence, as well as many other psychological issues such as aggression, schizophrenia, ADHD, homosexuality and dyslexia. They are still elusive. Now behavioural geneticists argue that it isn't a single gene but probably hundreds, each with a tiny effect. A massive study was published in 2013, based on scans of 127,000 people, to find the genes associated with educational attainment: adding together all the genes they found accounted for a mere 2% of the difference in attainment.

The latest study, by Robert Plomin's team in London, looks at the GCSE results of identical twins. Its calculations are based on the 'equal environments' myth: i.e. that all siblings have identical experiences. This is demonstrably untrue since identical twins are often persuaded into dressing the same and doing things together. They are likely to be in the same class, have the same maths teachers, work together on homework and so on.

Based on this spurious premise that 'equal environments' applies as much to identical twins as to all siblings, Plomin's study calculates how much GCSE results derive from innate ability, and how little from environment and experience. It fails to look directly at parents' qualification or income and how that

correlates with the GCSE grades.

Given that identical twins have the same genes and also extremely similar environmental influences, we might expect a pair of twins to have identical grades. In fact, the level of correlation identified by Plomin – 60% heritability in Maths and Science - suggests that they are, on average, about a grade apart. This is not a promising conclusion for scientists wishing to demonstrate the genetic determination of intelligence.

Even the staunchest believers admit that many other factors affect academic achievement and success in life. So too does Gove's adviser Dominic Cummings. He argues that Sure Start nurseries don't raise achievement, but that a programme is needed to increase the children's "self-control" so that they won't grow up poor, addicted or criminal! Boot camps for babies next.

We should give the last word to Stephen Jay Gould:

"I am, somehow, less interested in the weight and convolutions of Einstein's brain than in the near certainty that people of equal talent have lived and died in cotton fields and sweatshops."

IN BOX

This article draws on the following critiques of recent Behaviour Genetics research:

<http://www.tes.co.uk/article.aspx?storyCode=6395645> Steven Rose: Is genius in the genes?

http://jayjoseph.net/yahoo_site_admin/assets/docs/AJP_MISTRA_PDF.157214425.pdf

<http://www.ssc.wisc.edu/econ/archive/wp2001-08.pdf>

<http://www.councilforresponsiblegenetics.org/genewatch/GeneWatchPage.aspx?pageId=384>

We also recommend the following books:

Stephen Jay Gould: *The Mismeasure of Man*

Stephen Rose, R Lewontin and Leon Kamin: *Not in our genes – biology, ideology and human nature*

Clyde Chitty: *Eugenics, race and intelligence in education*

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